

The Economics of Broiler Production: A Pioneering Venture by the Centre for Rural Research

Andrew Sheppard

Introduction

A report published by the CRR in the past year filled a gap in knowledge of the structure and economics of broiler production in England, in which a small number of vertically integrated processing companies dominate an industry with a UK value of £816m at the farm gate and £2.16bn in the supermarket. In the light of slender margins at the farm level, questions are raised about the conduct and performance of the processing and retailing industries.

In mid 2004, the Centre for Rural Research published a report on the economics of broiler (or table) chicken production¹. The report was the outcome of a year of detailed costings on more than 100 English broiler farms, preceded by a postal survey of the structure of broiler production. Broiler production has not hitherto received much attention from agricultural economists and little robust data, if any, was available in the public domain. The study was commissioned and financially supported by Defra, covering production in both the farmer-owned and vertically integrated company sectors.² Data was collected by the University of Exeter and seven other universities and colleges, each working in their respective geographic areas and the survey covered the whole of England. Through statistical weighting based on the findings of the Structure Survey, the resulting measures of technical and financial performance represent the entire English broiler industry.

The Structure Survey

Postal questionnaires for the Structure Survey were sent to all farm holdings in England recorded by the Agricultural Census as having 2000 or more broiler chickens in any one of the three years preceding the survey date. The cut-off point of 2000 birds was set low in the hope of locating a greater number of organic and free-range producers.

¹ The Structure and Economics of Broiler Production in England. Number 59 in the series Special Studies in Agricultural Economics, University of Exeter Centre for Rural Research, June 2004, £15.00. Also available for free download at <http://www.ex.ac.uk/crr>

² Somewhat more than half of all broiler chickens in England are produced on farms owned and operated by 15 vertically integrated production and processing companies. Four companies between them not only process upwards on 70% of all UK production but produce almost a half of those birds themselves on company owned farms. Most of the rest are produced on farmer owned holdings, but with chicks, feed and some other inputs either supplied or closely controlled by the company.

In the case of holdings known to be owned and operated by one of the vertically integrated companies, slightly modified, but essentially similar questionnaires were sent to 16 company head offices.

Besides establishing the numbers and ownership of the birds on a holding and whether production was conventional, less-intensive, free-range or organic, the survey looked at the arrangements for purchasing the major inputs of chicks, feed, vaccines and medications, whether birds were reared separately according to sex, membership of assurance schemes, and at any special ways in which chickens were marketed. The questionnaire also enquired of producers their greatest concerns regarding the future of their business. These are some of the findings of the Structure Survey:

- Response from non-company holdings was 69%, from companies 75%, though small companies responded more readily than large companies. Overall, 56% of broiler production sites in England and 56% of all broiler chickens were accounted for by responses to the survey.
- Most company and non-company owned sites produced chickens along conventional lines (indoor, intensive, non-organic) selling birds aged 35 to 56 days; 56% of respondents reared chicks separately by sex; 9% kept free-range chickens, of which one-third (3% of the total number of holdings) were organic producers.
- In many cases, partial thins³ to reduce stocking density towards the end of the growing period took out some or all of a particular sex, usually the pullets.
- Most flocks had already attained registered status within a quality assurance scheme, or were grading up towards such a scheme, usually Assured Chicken Production.
- Both rearing separately by sex and registration under a quality assurance scheme were most strongly favoured by the larger flocks.

Regarding their greatest concerns about the future of their businesses, non-company respondents highlighted:

- Imported chicken from countries not subject to the same legislation.
- The power over the industry of supermarket groups.
- Profit margins insufficient to invest with confidence for the future.

Company respondents were most concerned about.

³ Thinning is the practice of taking just some of the birds from a house as the birds grow bigger and maximum permissible stocking rates – expressed in kg per square metre – are approached.

- Ever tighter welfare, hygiene and other regulations.
- Increased feed cost because of legislation/supermarket demands.

Of concern to both company and non-company respondents were:

- Profit margins insufficient to invest with confidence for the future.

The risk of a food scare relating to poultry was not given a high rating, scarcely registering at all as a concern for the company sector. Also, neither sector reported any great difficulty in finding and retaining suitable labour.

The Economic Survey

The economic phase of the study investigated all fixed and variable costs at the farm-level for broiler production, determining Gross and Net Margins.⁴ In order to establish measures of technical efficiency, and to validate the results, accurate measures of physical quantities of feed and labour inputs were required; and of liveweight yields, also precise numbers of chicks put into broiler houses and finished birds taken out, including precise dates. Capital plant and equipment were assessed, as were self-employed or otherwise unpaid labour and other farm-produced inputs.

“All flock” results were computed for the 70 non-company and 36 company holdings, with many sub-groups based on size and other production characteristics. Weighted figures were computed combining all holdings so as to represent all broiler farms in England.

The weighted net margin, representing 600 million birds produced in England in the year, proved to be three pence of a farm gate value of £1.16 per bird. For the farmer-owned holdings, the margin was eight pence; whilst the vertically integrated company producers merely broke-even (that is, they had a net margin of 0.0 pence). Free range producers achieved a markedly better margin of 24 pence.

One of the more remarkable features of the results of the study was the narrow range of many performance indicators across the various production types and size groups, even the top and bottom thirds. Feed conversion ratio⁵ (almost invariably 1.9:1), average weight at which birds were sold (2.2 to 2.6kg) and Gross Margins (20.5 to 26.9 per cent of value of output) all fell within tight bands. This despite the fact that survey flocks were distributed throughout England and flock size varied widely, with the largest flock almost 36 times the

⁴ Gross margin is the value of the enterprise output less variable costs; while net margin is the residual return to the entrepreneur’s management skills and capital resources committed.

⁵ Feed conversion ratio is the weight of feed used divided by the liveweight output of the birds produced.

size of the smallest. The age of buildings and other plant resources also varied widely, and local management was different in almost every case, even if the number of processing plants and the variation in their contract specifications were rather small.

Chicks, feed, vaccines and medications, almost invariably supplied to non-company farms by the processor, constituted more than 80% of total costs. That arrangement gives the processors a considerable measure of control over major inputs, their cost and, in practice, the farm-level profit margin of broiler production. Such a feature might be viewed in a negative light by farmers and consumers. However, the fact that those inputs are almost invariably invoiced only as a deduction from the ultimate payment for finished birds has a major cash flow benefit for producers and greatly reduces their working capital requirements.

Companies invoiced themselves for chicks and for feed at unit prices that were marginally lower than for their contract producers, but differences can be explained in terms of bigger volumes for the larger average company holding and because company holdings are predominantly in the grain-growing eastern regions. It was not felt that companies were unfairly exploiting their monopolistic position as suppliers of chicks or feed. However, the cost of as-hatched chicks, almost universally a little less than 23 pence and as such a large proportion of the total cost of producing a broiler chicken, suggest that the costs and margins of the breeding companies and hatcheries might merit a closer look.

As suppliers of chicks to their contracted producers, the processors are in a position to select the breed and strain of chick that best suits their own purposes. Similarly, their control of feed formulations is likely to be to their own advantage. Work done by Carolyne Kemp of Aviagen, the parent company of Ross (the leading broiler breeding company), indicates that because of its impact on the balance of breast and other meat, the optimum feed formulation for a broiler chicken varies according to whether a chicken is to be sold as a whole carcass or as separate portions of breast, legs and wings. It is thus in the processor's interest to regulate the formulation of the feed according to the manner in which it is anticipated that the chicken will be marketed. This is a powerful reason for the processors to want to keep the supply of feed within their own control.

Buildings, equipment and machinery amounted to 7.3% of total costs, £8.94 per square metre of production space. Electricity, gas, heating oil and water charges totalled 3.3% of total costs - 3.8 pence per bird.

The amount of labour put into broiler holdings and its cost were among the more variable items. The weighted mean for all holdings was 4.6 hours per 1000 birds sold, with a range among conventional production groups from 3.3 to 6.9 hours.

Free range producers input 14.7 hours per 1000 birds sold. It should be remembered, however, that several of the more labour intensive tasks in the broiler production cycle are customarily undertaken by contractors (cleaning-out and fumigating houses), or by gangs of labour provided by the processor (taking chicks from their boxes on day one and catching and crating birds at the end of the cycle). The labour input on those occasions might cumulatively double the total labour involved in the production of a conventionally produced chicken.

The top third⁶ non-company holdings had the lowest labour cost and the lowest labour usage. The highest labour cost was incurred by the smallest-sized non-company holdings. However, rather high labour costs were also found on company farms; even though they were not heavy users of labour hours, per hour labour cost was greater. Company holdings were also notable for greater fixed costs other than labour.

Thus, although company holdings were ahead of the non-company holdings at the Gross Margin level, it was higher fixed costs that reduced the company holdings to their nil return.

Reaction to Publication of the Figures

The University of Exeter Press Office issued a News Release headed, “*Why chicken farmers are getting a raw deal - but who's making a mint?*” The Press Office correctly anticipated that journalists would want to know more about the mark-up from farm to supermarket from £1.16 to rather more than £3.50 and that the public would be interested in the apparent injustice of the farmer making a profit margin on a chicken of only three pence.

As author of the report, I quickly became a minor celebrity, albeit only for a couple of days. The regional ITV news, both BBC Radio Devon and BBC Radio Cornwall and the national BBC Farming Today programme all broadcast interviews and there was good regional newspaper coverage, with the national farming press catching up as soon as editorial schedules permitted. The magazine Poultry News made front page news of us. Unfortunately, a two day embargo on the News Release – to give all branches of the media the opportunity to break the news on the same day – was not sufficient for the BBC television news, whose environment correspondent telephoned to request a four day embargo in future.

Pointing out that the study and report were concerned with the economics of production on the farm, not the costs and margins of processors and supermarkets, did not entirely thwart questions on those lines – after all the press notice itself had enquired, “Who’s making a mint?” The question, “Might it be

⁶ Top third by margin per £100 of output.

feasible to add a few pence to the price of a supermarket chicken, the additional sum to be passed in full back to the farmer?" epitomised the sympathy felt for producers.

I was at pains to point out that not only was I unaware of the profit margin on a chicken for either the processor or a supermarket (the study from which we had just published the findings not being concerned with them), but that, notwithstanding the degree of mark-up between farm and supermarket, it is not necessarily the case that either are making excessive profits.

During the time of the study, two processors were taken over by other, larger processors. Other, smaller ones, cut back or ceased producing chickens themselves, concentrating only on processing. Those most committed to producing as well as processing chickens rationalised their businesses with apparent urgency, smaller production units were sold-off or closed, larger ones further expanded.

Given that some processors seemed more concerned to consolidate market share of the processing activity than they were of production, it might be concluded that processing is more profitable than production. However the contraction in number of processors and the unwillingness to sustain inefficient or unprofitable production units suggests slender margins for at least some processors. Furthermore, in a tight and highly-competitive market it would be a rational business strategy to concentrate resources on the core activity.

Although the economics of neither processing nor retailing chickens formed a part of the study, it is known that the wholesale value of chicken meat leaving processing plants for supermarkets is in the region of £1.50 per kg. That makes the typical chicken worth around £2.64 on leaving the processor, special deals apart (the supermarkets tend to run 3 for 2 offers and similar at the supplier's expense). The wholesale value of a dressed and packaged chicken carcass is thus 227% of farmgate value of the live chicken.

Supermarkets are currently selling whole chickens for around £2.14 per kilogram, 324% of farm gate value, a mark-up over wholesale price of 43%. For its 43%, the supermarket has to provide some warehousing, handling and transport, its retail store, with staff and generous amounts of car parking, advertising and other costs associated with retailing, and cover losses to wastage and theft.

It is well known that one UK supermarket reported profits in excess of £1bn from its last financial year and is expected to make in excess of £2bn in the current year. But its closest rival, with a similar market share, made only £0.75bn and in profitability terms has been seen to wobble in recent years. Other

supermarket groups whose annual results are in the public domain have for some years past also been seen to report relatively small profits and occasionally to lose money. It might be concluded, therefore, that supermarket retailing can be very profitable for a market leader, but that profitability largely depends on the marketing success and efficiency of the retailing operation. The mark-up between wholesale and retail prices is not necessarily excessive.

Further Work on the Economics of Broiler Production

The publicity arising from the CRR survey on the economics of broiler production resulted in enquiries about the potential impact of changes to livestock welfare regulation at the EU level: on matters such as maximum stocking density in chicken houses, growth rates, and whether or not ‘thinning’ should be permitted. We are currently examining the economic aspects of such possible legislative changes and look forward to informing the debate.

